Dosimeter - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 120 pages | Mordor Intelligence

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Report description:

The Dosimeter Market size is estimated at USD 3.91 billion in 2025, and is expected to reach USD 5.51 billion by 2030, at a CAGR of 7.1% during the forecast period (2025-2030).

Key Highlights
- Dosimeters have diverse applications in various industries, including the medical and manufacturing sectors. In the manufacturing sector, using radioactive sources or X-ray machines has increased the need for dosimeters to monitor radiation exposure over an extended period. Passive dosimeters, such as film badges and thermoluminescent dosimeters, are commonly used for routine monitoring in the manufacturing industry.
- Government regulations, which aim to control emissions and ensure labor safety, boost the demand for dosimeters in the industrial sector. However, the device's high cost, sensitivity to electromagnetic fields, and mechanical instability can hinder the growth of the active dosimeter market.
- The demand for dosimeters is propelled by the increasing prevalence of cardiovascular diseases, cancer, and neurology-related conditions, necessitating precise radiation monitoring. Dosimetry equipment finds extensive applications in nuclear medicine and therapeutic radiopharmaceuticals, presenting lucrative prospects. Healthcare practitioners are embracing wearable dosimeters to analyze radiation levels, while the rising use of imaging devices mandates robust radiation exposure monitoring.
- Market growth is further fueled by continuous research and development efforts aimed at enhancing dosimeter technology. Advancements such as miniaturization enable real-time monitoring with smaller, wearable dosimeters, catering to diverse industries from nuclear facilities to space exploration.
- Additionally, dosimeters equipped with wireless communication capabilities facilitate seamless data transfer and remote monitoring, while personalized dosimetry approaches consider individual variations in radiation sensitivity, incorporating techniques like biodosimetry and accounting for genetic variability.

- Overall, the demand for dosimeters is expected to grow in various industries, driven by factors such as the increasing use of radiation-mediated technology, government regulations, and the need for worker safety. However, market growth may be limited by factors such as the high cost of the device and its sensitivity to environmental factors.
- In June 2024, Thermo Fisher Scientific announced the launch of the Thermo Scientific NetDose Pro digital dosimeter, a wearable, connected device for monitoring radiation. This compact instrument is designed to track and inform radiation exposure risk for personnel in a variety of industries, such as healthcare, and help companies adhere to stringent regulatory requirements.

Dosimeter Market Trends

The Rising Application of Radioactive Substances Across the Industrial Sector is Driving the Market

- Science and industry have numerous applications for radioisotopes that improve productivity and provide unique insights into materials and processes. Radioisotopes serve as tracers to monitor fluid flow and filtration, detect leaks, and gauge engine wear and corrosion of process equipment. According to the International Atomic Energy Agency (IAEA), several hundred thousand such gauges are operating worldwide. They are used to measure the amount of radiation absorbed in materials.
- Radioisotopes are also used to study the mixing and flow rates of various materials, inspect metal parts, and assess the integrity of welds across a range of industries. Industrial gamma radiography utilizes the penetrating power of radiation to screen materials effectively. It works similar to X-rays used in airport security checks but with a small pellet of radioactive material in a sealed titanium capsule.
- In addition, radioisotopes are used as fuel in nuclear reactors to generate power and control the thickness of paper, plastic, and metal sheets during manufacturing. They are also used to manufacture luminescent paints and objects that exhibit radio-luminance.
- India has seen rapid industrialization in recent decades, leading to increased radiation and harmful gases. Dosimetry systems are being installed to prevent excessive radiation exposure to employees and healthcare professionals in many industries and hospitals. These factors are expected to propel the growth of the market in India.
- As of January 2024, approximately 70 companies in the United States were working on advanced nuclear reactors, of which around 7 companies were working with regulators due to the nature of the nuclear project, based on an article published by MIT. The interest in alternative nuclear reactor technology, besides the standard water-cooled technology, has increased.

Asia-Pacific is Expected to Witness Significant Growth

- Asia-Pacific is expected to dominate the global dosimeter market, primarily due to the increasing adoption of radiation across various end-user industries. The region is anticipated to witness significant revenue growth, driven by the growing focus on nuclear power for electricity generation to meet the rising energy demands and stringent regulations for human safety in emerging countries such as China, Japan, and India.
- Exxon Mobil estimates that 2040 nuclear energy demand in the Asia-Pacific region will reach 22 quadrillion BTUs, accounting for 45 quadrillion BTUs. China Nuclear Energy Association reported that in 2023, China's nuclear power generation reached 440,000 gigawatt-hours, accounting for 5% of the nation's electricity output, and it is expected to increase further to meet the population's clean energy demand.
- According to the World Nuclear Association, China is on track to become the world's leading producer of nuclear energy by 2030, surpassing the United States. The increasing construction of nuclear power plants in China is expected to boost dosimeter demand over the forecast period. For instance, in 2024, China started the construction of 3 nuclear reactors, and the country has planned the additional construction of 23 nuclear reactors from 2025 to 2030.

- China also included R&D in nuclear safety in their national planning for scientific and technological programs, established a National Research and Development Center for Nuclear and Radiation Safety Regulation, and conducted research on key technologies of radiation environment monitoring and technical review to enhance safety. These initiatives are expected to drive dosimeter demand in China during the forecast period.
- Japan has one of the world's largest aging populations, with a significant portion being over 65 years old; this population is expected to rise substantially by 2060. According to the 2023 national statistics, 1 out of 10 people were aged 80 or above, while 29.5% of the population was 65 or above. Those aged above 65 are expected to account for 34.8% of the population by 2040, based on data provided by the National Institute of Population and Social Security Research. The aging population is likely to drive demand for healthcare solutions, and the rise in cancer incidence in the geriatric population will affect the demand for dosimeters from the healthcare sector. Hence, the dosimeter market is expected to expand across Japan in the coming years.
- As of April 2024, based on the information published by the IEA and World Nuclear Association, there were about 60 nuclear reactors under construction in 16 countries, along with 110 nuclear reactors planned for the future. Asia is leading the race in terms of construction activities. About 30 countries are planning or starting a nuclear reactor program.

Dosimeter Industry Overview

The dosimeter market is semi-consolidated, with the presence of major players such as Fortive Corporation, Mirion Technologies Inc., Thermo Fisher Scientific Inc., Arrow-Tech Inc., and Fuji Electric Co. Ltd. These players are adopting strategies such as partnerships and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

- April 2024: Mirion Dosimetry Services, a Mirion Medical company, unveiled the InstadoseVUE wireless dosimeter, offering enhanced radiation exposure monitoring. Advanced wireless technology allows it to ensure stable connectivity, faster data transmission, and prolonged battery life. The device features an electronic display for real-time insights and status updates. The dosimeter simplifies compliance with its anytime, anywhere dose monitoring, eliminating the need for traditional badge return processing.
- May 2023: IBA presented the latest innovations from its radiation therapy Quality Assurance offering at the European Society for Therapeutic Radiology and Oncology (ESTRO) Annual Meeting held in Vienna, Austria.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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